

36505

R3 - PA - Hatfield

Fish Impingement and Entrainment at West Penn Power Company's Hatfield Ferry Power Station

Prepared for
West Penn Power Company
Greensburg, Pennsylvania

January 1980

FISH IMPINGEMENT AND ENTRAINMENT
AT WEST PENN POWER COMPANY'S HATFIELD FERRY POWER STATION

Prepared for
WEST PENN POWER COMPANY
GREENSBURG, PENNSYLVANIA

January 1980

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Prepared by
ENERGY IMPACT ASSOCIATES, INC.
P. O. Box 1899
Pittsburgh, Pennsylvania 15230

CONTRIBUTING STAFF

This report was prepared by the personnel of Energy Impact Associates, Inc. (EIA) with the assistance of other consultants.

ENERGY IMPACT ASSOCIATES PERSONNEL

Project Administration

L. L. Simmons, Program Manager
G. A. Valiulis, Ph. D., Manager, Resource Analysis

Principal Investigator

J. M. Eggers, Aquatic Ecology

Project Personnel

J. R. Hageman, Field Collection and Sample Processing
V. L. Ostien, Project Secretary

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SECTION 1.0

SUMMARY

Hatfield Ferry Power Station is an electrical station located in Greene County, Pennsylvania. It is operated by West Penn Power Company and consists of three coal-fired units with a total net capacity of 1620 megawatts. Service water is withdrawn from the Monongahela River at a rate of approximately 30,000 gallons per minute (66.84 cubic feet per second) primarily to supply makeup water for two hyperbolic, natural draft cooling towers. The intake is a shoreline design with a skimmer wall, bar trash racks and seven vertical traveling screens.

Water intakes may adversely affect aquatic organisms by impingement of larger organisms on trash racks and traveling screens or by entrainment of smaller organisms. West Penn Power Company contracted Energy Impact Associates to conduct a fish impingement and ichthyoplankton (fish eggs and larvae) entrainment sampling program at Hatfield Ferry Power Station. This program included the collection and identification of fish in impingement samples and ichthyoplankton in entrainment samples and the preparation of a report presenting the results of these collections.

Fish impingement collections on the traveling screens at Hatfield Ferry Power Station were conducted during three 24-hour periods from May through July 1979. No fish were present in these collections.

Intake water was sampled to estimate ichthyoplankton entrainment from a total of 18 one-hour periods on 3 occasions from May through July 1979. A total of approximately 102,250 gallons of water was sampled. No fish eggs or larvae were found in any of these samples.

SECTION 2.0 INTRODUCTION

2.1 PURPOSE

West Penn Power Company (WPPC) contracted Energy Impact Associates (EIA) to conduct a fish impingement and ichthyoplankton (fish eggs and larvae) entrainment sampling program at the Hatfield Ferry Power Station. The purpose of this sampling program was to provide information which would examine levels of fish impingement and ichthyoplankton entrainment at the power station when the entire station was on cooling towers.

2.2 SCOPE

The scope of work included: 1) the execution of three fish impingement and ichthyoplankton entrainment surveys and 2) the preparation of a data report presenting the results of these surveys.

SECTION 3.0

HATFIELD FERRY POWER STATION

Hatfield Ferry Power Station is a baseload power station in the West Penn Power electrical system located in Greene County, Pennsylvania (Figure 3-1). It consists of three coal-fired generating units with a total net capacity of 1620 megawatts (MWe). Waste heat produced by the station is dissipated by two hyperbolic natural draft cooling towers. Water is obtained from the Monongahela River at a rate of approximately 30,000 gallons per minute (66.84 cfs) under normal conditions to be used as plant service water, boiler feed makeup, sanitary use and cooling tower makeup.

The water intake from the Hatfield Ferry Power Station (Figure 3-2) is a shoreline design, composed of a skimmer wall bar-type trash racks and seven vertical traveling screens. Only two of the seven traveling screens are functional. The remaining five are bulkheaded.

Logs and branches are diverted away from the intake area by the concrete skimmer wall. Large debris that enters the intake area is caught on the bar racks and cleared away by a mechanical trash rake. Two traveling screens of 3/8 inch mesh remove smaller objects from the water that passes through the bar racks. A spray of water is used to backwash the traveling screens and carry the dislodged material via a trash sluiceway into a large metal plate trash basket. Trash removed from this basket is hauled away to an off-stream dump site.

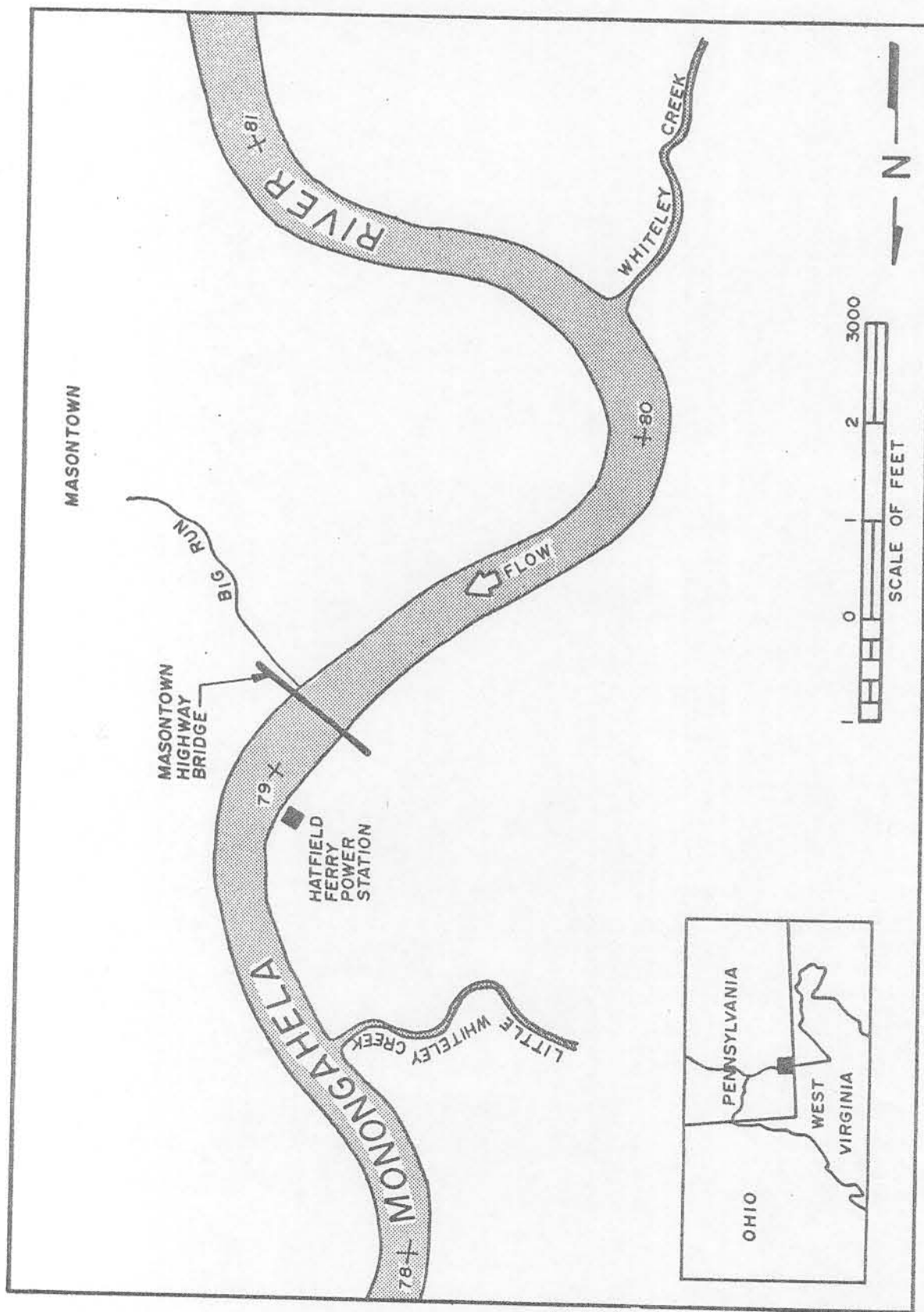


Figure 3-1. Location of West Penn Power Company's Hatfield Ferry Power Station

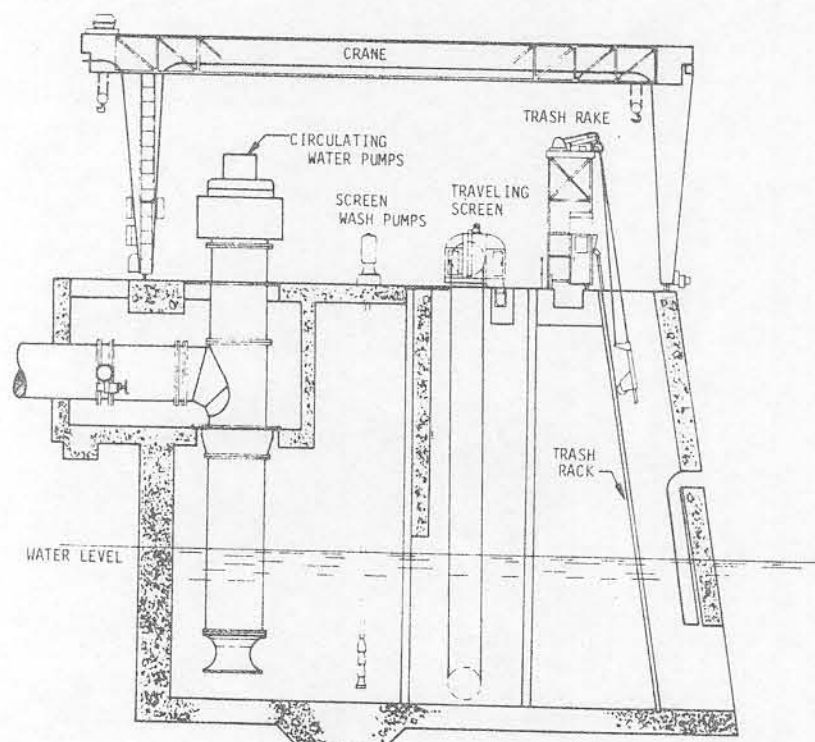
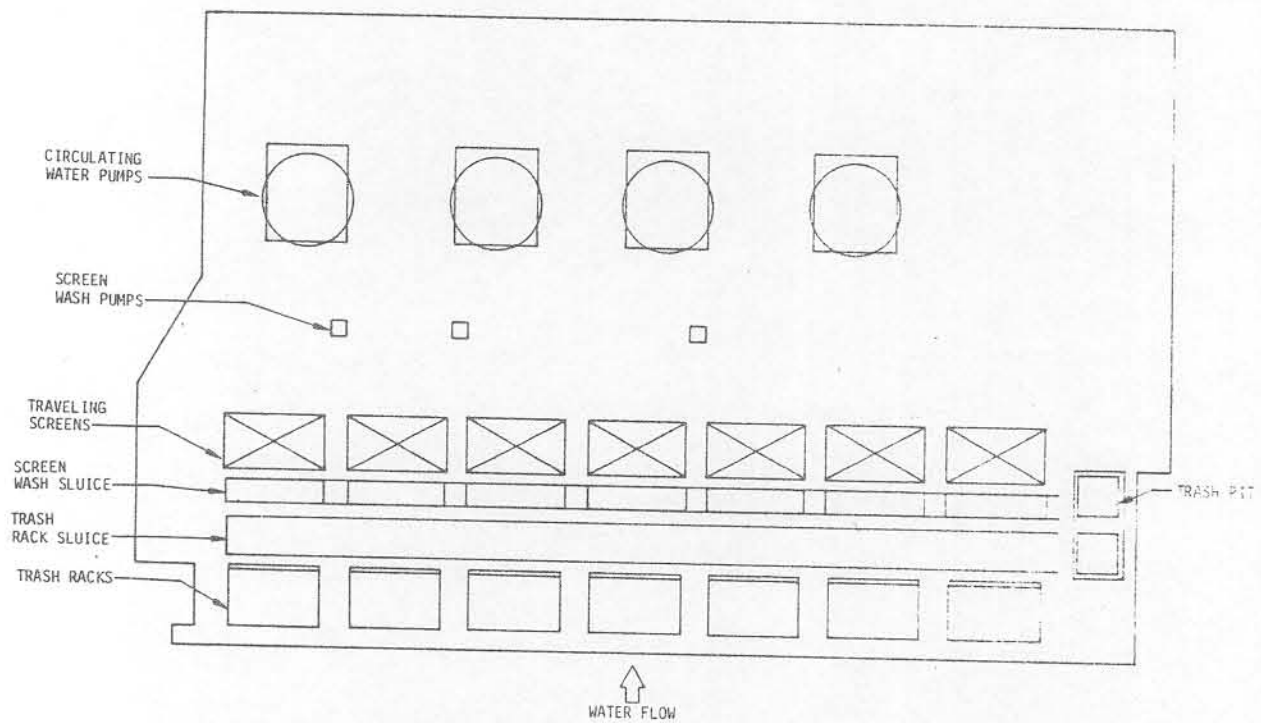


Figure 3-2. Schematic of Water Intake at Hatfield Ferry Power Station

SECTION 4.0

METHODS OF SAMPLE COLLECTION AND ANALYSES

The schedule employed for collection of impingement and entrainment samples is presented in Table 4-1. Sampling was initiated in mid-May, June and early July.

4.1 IMPINGEMENT

Impingement samples were collected by EIA with the assistance of power station personnel. At the beginning of each 24-hour sampling period, traveling screens and trash racks were cleaned. The trash basket was lined with a 1/4-inch mesh seine. Traveling screens were operated every eight hours, and the trash basket checked for fish.

All organisms collected in the trash basket during the 24-hour sampling period were preserved in 5 percent formalin and retained by EIA for analysis. Fish were identified to species, weighed and counted.

4.2 ENTRAINMENT

Ichthyoplankton (fish eggs and larvae) entrained through the power station water intake system were sampled according to the schedule shown in Table 4-1.

EIA collected entrainment samples with the assistance of power station personnel. A submersible Homelite SP-150 pump and Kenco Model 139 pump were used to pump water from the intake area in front of the trash racks through plankton nets with a mesh size of 500 microns. Approximately 4509.1 to 6852.1 gallons of water were sampled in each of 3 one-hour periods during 24 hours.

Material retained in the plankton nets after each one-hour period was preserved with 5 percent formalin and retained by EIA for analysis. Each sample was examined for fish eggs and larvae. Any larvae present were identified to the lowest taxonomic category practicable and enumerated. Fish eggs present were also enumerated.

TABLE 4-1
SCHEDULE OF FISH IMPINGEMENT AND ENTRAINMENT
SAMPLING AT HATFIELD FERRY POWER STATION

<u>Sample Period</u>	<u>Date</u>	<u>Impingement</u>	<u>Entrainment</u>
1	May 23 to 24, 1979	x	x
2	June 26 to 27, 1979	x	x
3	July 12 to 13, 1979	x	x

SECTION 5.0

RESULTS

5.1 IMPINGEMENT

During three 24-hour sampling periods (a total of 72 hours of sampling) from May through July 1979, no fish were impinged on the traveling screens of the Hatfield Ferry Power Station (Appendix A).

5.2 ENTRAINMENT

Intake water was sampled for a total of 18 hours from May through July 1979 to evaluate entrainment of ichthyoplankton (fish eggs and larvae) through the water intake system at Hatfield Ferry Power Station (Table 5-1). No fish eggs or larvae were found during the analysis of samples from the total of 102,250.8 gallons of water pumped during the surveys.

TABLE 5-1
FISH EGG AND LARVAE ENTRAINMENT DATA COLLECTED DURING EACH SAMPLING PERIOD
AT HATFIELD FERRY POWER STATION FROM MAY 23 TO JULY 13, 1979

<u>Collection Date</u>	<u>Hours of Collection</u>	<u>Collection Time (Hours)</u>	<u>Volume of Water Pumped (gallons)</u>	<u>No. of Fish Eggs</u>	<u>No. of Fish Larvae</u>
May 23, 1979	1745-1845 (h)	1.0	4509.1	0	0
	1755-1855 (k)	1.0	6852.1	0	0
May 24, 1979	0100-0200 (h)	1.0	4509.1	0	0
	0100-0200 (k)	1.0	6852.1	0	0
	1100-1200 (h)	1.0	4509.1	0	0
	1100-1200 (k)	1.0	6852.1	0	0
June 26, 1979	1300-1400 (h)	1.0	4509.1	0	0
	1300-1400 (k)	1.0	6852.1	0	0
	2100-2200 (h)	1.0	4509.1	0	0
	2100-2200 (k)	1.0	6852.1	0	0
June 27, 1979	0200-0300 (h)	1.0	4509.1	0	0
	0200-0300 (k)	1.0	6852.1	0	0
July 12, 1979	1330-1430 (h)	1.0	4509.1	0	0
	1330-1430 (k)	1.0	6852.1	0	0
July 13, 1979	0230-0330 (h)	1.0	4509.1	0	0
	0230-0330 (k)	1.0	6852.1	0	0
	1000-1100 (h)	1.0	4509.1	0	0
	1000-1100 (k)	1.0	6852.1	0	0

* Parenthesized letters designate pump type: (h) Homelite and (k) Kenco.

APPENDIX A
IMPINGEMENT DATA

IMPINGEMENT DATA AT HATFIELD FERRY POWER STATION

[illegible]

IMPINGEMENT DATA AT HATFIELD FERRY POWER STATION

DATE/TIME: May 23, 1979 at 2100 hours to May 24, 1978 at 0530 hours

[illegible]

IMPINGEMENT DATA AT HATFIELD FERRY POWER STATION

[illegible]

IMPINGEMENT DATA AT HATFIELD FERRY POWER STATION

DATE/TIME: June 26, 1979 at 0100 hours to June 26, 1979 at 1800 hours

[illegible]

IMPINGEMENT DATA AT HATFIELD FERRY POWER STATION

[illegible]

IMPINGEMENT DATA AT HATFIELD FERRY POWER STATION

DATE/TIME: June 27, 1979 at 0200 hours to June 27, 1979 at 1000 hours

[illegible]

IMPINGEMENT DATA AT HATFIELD FERRY POWER STATION

[illegible]

IMPINGEMENT DATA AT HATFIELD FERRY POWER STATION

[illegible]

IMPINGEMENT DATA AT HATFIELD FERRY POWER STATION

[illegible]

APPENDIX B
POWER STATION OPERATION AND RIVER CONDITIONS

TABLE B-1

SUMMARY OF POWER STATION OPERATING AND RIVER CONDITIONS AT HATFIELD FERRY POWER STATION
DURING THE SAMPLING PROGRAM (MAY THROUGH JULY 1979)

Date	Weather Conditions	Intake Temperature (°F)	Operational Screens*	Station Load (MWe)**	River Elevation (feet)	Operational Service Water Pumps†
May 23-24, 1979	Cloudy, rain, cool	64.4	1	1023	764.4	4
June 26-27, 1979	Sunny, warm	83.3	1	998††	763.6	4
July 12-13, 1979	Partly cloudy, warm, scattered showers	85.1	1	1274	763.0	4

* of 2 total operational screens

** average hourly load during the 24-hour sampling period.

† of four total

†† Unit 1 intermittently out of service

36505
Intake
R3-PA-Hatfield



Allegheny Energy Supply

an Allegheny Energy company

4350 Northern Pike
Monroeville, PA 15146-2841

Environmental Permitting & Reporting

January 29, 2004

Stratus Consulting
1881 - 9th Street, Suite 201
Boulder, CO 80302
ATTN: Dr. Strang

U. S. Environmental Protection Agency (EPA)
316(b) Industrial Screener Questionnaire
Allegheny Energy Supply Company, LLC
Hatfield's Ferry Power Station



Dear Dr. Strang:

I received a telephone call from Ms. Marquitta Davis - Tetra Tech, Inc. (EPA's contractor for the subject Questionnaire) regarding a 316(b) study that we conducted in 1979. The study, entitled *Fish Impingement and Entrainment at West Penn Power Company's Hatfield Ferry Power Station*, was identified in our response to question 15.(b) of EPA's Questionnaire. Ms. Davis requested that we provide you with a copy of this study. Enclosed please find a copy of the study.

Please note that during the study period (May through July 1979), no fish were impinged and no fish eggs or larvae were found in any of the samples collected. Also noteworthy, is the fact that Hatfield's Ferry Power Station is equipped with two hyperbolic, natural draft cooling towers.

Should you have any questions regarding this submittal, please contact me at (412) 858-1671.

Sincerely,

Joseph P. Lapcevic
Environmental Specialist

Enclosure